

LA-UR-21-22487

Approved for public release; distribution is unlimited.

Title: AMPP Newsletter - Feb 2021

Author(s): Mondragon, Krystal L.

Intended for: To send to all AMPP Employees

Issued: 2021-03-15

Disclaimer:

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by Triad National Security, LLC for the National Nuclear Security Administration of U.S. Department of Energy under contract 89233218CNA000001. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

AMPP NEWSLETTER

FEB 2021

A MESSAGE FROM STACY MCLAUGHLIN, DIVISION LEADER

AMPP is known for excellence in our NNSA and DOE missions as well as our operations that support those missions. Excellence in mission operations requires the execution of sustained manufacturing operations that are reliable and responsive to mission needs across all of AMPP's portfolio. With this in mind I am proud to introduce this quarter's AMPP Division newsletter, with a focus on excellence in manufacturing.

Fiscal Year 2021 will see continued growth within AMPP as a Division across all programs. The Division today is currently at 235 staff with plans to grow to over 250 by the end of the year. This type of sustained growth has lead us to looking for opportunities for improvement and standardization to ensure efficient and effective manufacturing operations.

In this quarter's newsletter you will see how we have increased our LDRD research portfolio with a focus on long term improved manufacturing, how we are applying Lean techniques such as 5S today and how we plan on furthering our application of these techniques for improved manufacturing. Many of the initiatives taken within AMPP are adopted in other divisions and even ALDWP wide, such as the inventory preparation desktop instruction, human performance improvement initiative and the recently rolled out Mentor/Mentee program.



In closing, we are now entering our eleventh month of working diligently to prevent the spread of COVID-19 in our Laboratory community, while continuing to execute successfully across all of our programs.

I want to thank all of you for your diligence and perseverance during these challenging times. It is through your individual and team efforts that we have been so successful. Keep up the great work!

Stacy McLaughlin
AMPP Division Leader

Congrats!

LANL SERVICE ANNIVERSARIES

Steve McKee, AMPP-DO - 30 years
Ann Schake, AMPP-3 - 30 years
Carrie Shimek, AMPP-4 - 5 years

EMPLOYEE SPOTLIGHT: CHASTITY KOLAR

Meet Chastity Kolar, AMPP-3's (ARIES) group leader! Chastity started at LANL in 1991 and has been working at TA-55 since 1997. With degrees from both the University of New Mexico and Southern New Hampshire University, at the Lab, Chastity has worked as a vault operator, vault supervisor, nuclear materials specialist, and first line manager. She began serving as the ARIES group leader in September 2020.

One thing AMPP employees may not know about her is that more than 20 years ago, Chastity was crowned Miss Los Alamos and competed in the Miss New Mexico pageant! When she's not at work, she loves spending time with her 8-year-old son, Keiland, and their fun variety of pets: Waggy the dog, Snow the puppy, Pig the cat, and Rainbow the chameleon. Congrats on your new position, Chastity!



Welcome new employees!

AMPP-1:

Juan Rodriguez
Tomas Martinez
Robert Bustos
Brian Tollis
Brent Mosier
Ralph Singleton

AMPP-3:

Colin Gordon
Julius Payne
Justin Trujillo
Frank Tilman
Bradley Weilacher
Samantha Sopha
John Auxier II

AMPP-4:

Zachary Nelson
Jose Aguilar
Jordan Vialpando
Kristopher Rotter
Rae Fancher

Ultrasonic Filtration: A Revolutionary Technology for Hydroxide Precipitation

by Audrey Roman (AMPP-1), Adam Parkison (AMPP-4), and Jim Coons (C-CDE)

Hydroxide precipitation operations present persistent bottlenecks for production activities at TA-55 due to stagnant filtration processes. Efforts to improve filtration rates with higher porosity membranes have been ineffective and present problems for waste treatment due to purity issues. Work is being performed to demonstrate the ability of ultrasonic filtration (UltraSep) to effectively and efficiently remove inorganic particulate matter from aqueous suspensions for use in several actinide processes throughout TA-55. The use of this UltraSep system will revolutionize solid precipitate removal by eliminating membranes, greatly simplifying hydroxide precipitation operations at TA-55.

During traditional hydroxide filtration processes, loose interparticle networks build up on membranes to reduce permeation rates to a trickle creating large backlogs of materials in process. UltraSep replaces the membrane with an ultrasonic standing wave, which traps particles and opens wide channels for clarified liquid to flow through, as shown in Figure 1.

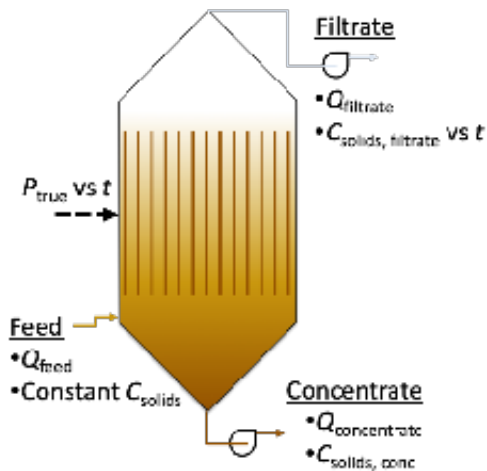


Figure 1. Filtration cell used in the UltraSep system.

In FY21, LDRD Mission Foundation is funding a Phase 1 project to investigate fundamental performance-limiting behavior of surrogate hydroxide precipitates, including tests with surrogate materials using LANL's research grade UltraSep system. Iron hydroxide, zirconium hydroxide (uranium surrogate), and cerium hydroxide (plutonium surrogate) aqueous suspensions have been created to demonstrate the efficacy of ultrasonic filtration on these systems. Recent tests have shown a clear and rapid removal of the aqueous substrate, as shown in Figure 2. Hindered settling has been observed during these preliminary tests, indicating improvement is possible with pH control, a phenomenon which is the focus of ongoing research efforts. This work seeks to understand the relevant challenges of applying UltraSep with an active pH adjustment capability to processes at TA-55 through the characterization of both surrogate and eventually non-surrogate materials.

While this technology has been shown to be effective for applications of interest to TA-55, the existing UltraSep system is unsuitable for operations in gloveboxes where a compact prototype with a simple user interface is needed. It is for this reason that programmatic funds have been secured for the

development of a compact, automated UltraSep system. These funds are being used to design and assemble a small UltraSep RF power and control module with scalability to 'n' vessels in order to meet throughput demands of 1 liter per hour. The small prototype is being designed for external placement adjacent to a glovebox with a simple user interface and internal components eventually capable of pH control. The UltraSep prototype enclosure will be designed for normal laboratory environments, with access to vessels located in gloveboxes using a feedthrough system.

The efforts described here have shown that ultrasonic filtration is a viable method for hydroxide separation from aqueous suspensions. Identification and characterization of the relevant natural phenomena are underway and their dependence on pH will continue to be studied and understood within the paradigm of ultrasonic filtration performance. These ongoing activities have shown the clear potential of this technology to revolutionize hydroxide precipitation processing at TA-55 and the NNSA complex by alleviating fundamental constraints, dramatically reducing radiation dose and physical demands to operators, and improving the caustic glovebox atmospheres that contribute to equipment corrosion and shortened lifetimes.

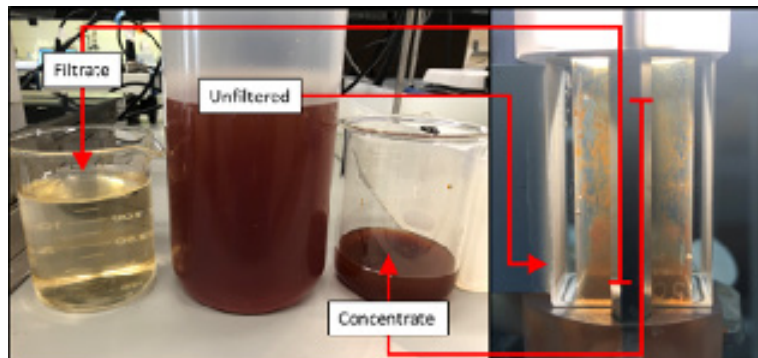


Figure 2, Results of a continuous ultrasonic filtration trial of iron(III) hydroxide (1 g/l). Flasks and bottles to the left reveal a stark contrast between the filtrate, unfiltered feed, and concentrate materials.

AN INTRODUCTION TO LEAN

What is Lean?

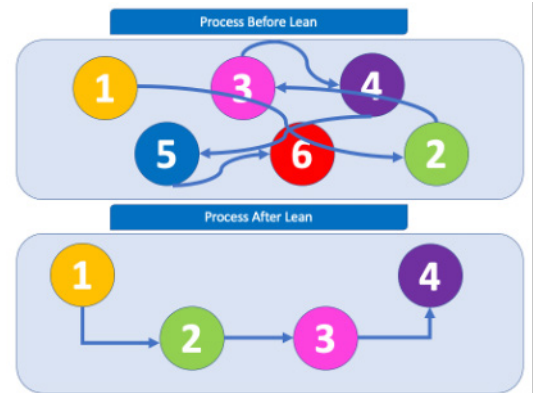
Lean is a methodology, a philosophy, and a mindset. In short, Lean is a popular approach used for streamlining processes by eliminating waste and optimizing process flow. MIT researchers in the 1980s coined the term “Lean” to describe the Toyota Production System. This name was selected because the process is aimed at using less of everything (e.g., space, effort, and investments).

What is the goal of Lean?

A Lean culture/program focuses on empowering, enabling, and supporting employees in their efforts to identify and eliminate waste. Employee’s actions are targeted at addressing unproductive and outdated processes in order to optimize process flow.

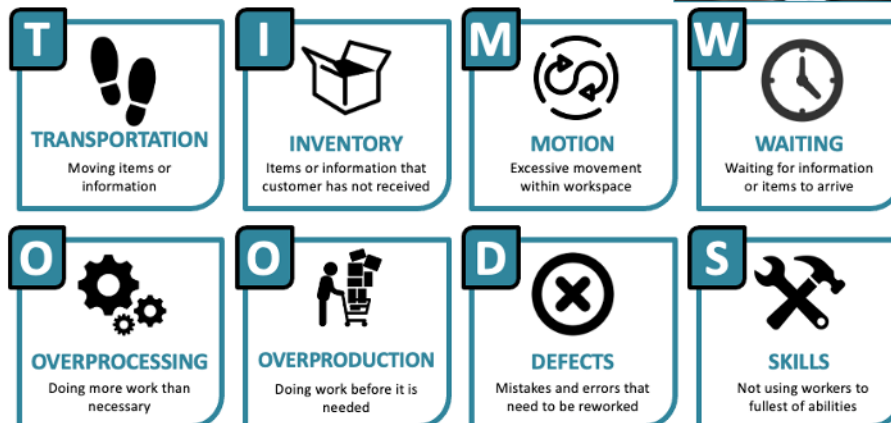
What is waste?

In the context of the Lean methodology, waste is an activity or process that creates a strain on the organization’s time and resources. Waste provides no value to the organization or our customers. Waste is often referred to as either “Muda,” the Japanese term, or the “8 Wastes.”



HAVE YOU SEEN **TIM WOODS**?

TIM WOODS is an acronym that represents the **8 forms of waste** found in processes, that should be reduced or eliminated.



AN INTRODUCTION TO LEAN, ctd.

What is your role in a Lean culture?

Our goal is to develop a good foundational knowledge of the Lean process and the tools used to implement it. This knowledge will ensure that all employees will be able to identify waste and bring it to their supervisor and the team's attention. Additionally, this may include helping with solving problems by participating in lean events. While we may not address all identified wastes immediately, it is important to find them and ensure they are appropriately prioritized.

What should you expect moving forward?

AMPP's goal is to develop a strong "Lean Culture." This goal will be accomplished by increasing process knowledge and deploying support where needed to help achieve improvements. In support of this, we will be slowly rolling out short articles such as this to help educate all employees on the tools that can be used to implement the Lean methodology. Additionally, we will be looking for areas where we can start to implement changes. As we accomplish these initiatives, we will share the success stories in the quarterly and monthly newsletters. Please reach out to your supervisor if you see an opportunity to lean out one of your processes.

If you have any questions or suggestions regarding Lean or any continuous improvement program, please contact **Jack Britt**.

SO, WHAT IS 5S + SAFETY?

There are five basic steps to the 5S + Safety method:

Sort — Decide what is needed and eliminate the unneeded items.

Set in Order — Arrange and identify necessary items for ease of use.

Shine — Clean the workplace and keep it clean.

Standardize — Create consistency by identifying and applying standards.

Sustain — Maintain the 5S + Safety and establish ways to preserve the work area.

These steps are explained in detail. However, in all of these steps, the primary focus is always safety. This includes safety for employees who perform their regular duties in an area and safety for others who may enter into the area.



AMP NEWSLETTER

FEB 2021



Welding prep area



Scales and hot plate



Grinding/polishers and mounting press



Vibratory polisher, sonicator, and low speed saw



Mounting press and metallography staging area

- 1. Sort.** The first step of 5S + Safety is to determine what in a work space needs to be kept, what needs to be stored, and what needs to be disposed of. This can be a difficult task for employees who can see the potential value of items and may feel the need to hold on onto them just in case they're needed someday. Lean organizations realize that it is not a waste to get rid of things that aren't needed.
- 2. Set in Order.** The second step in the 5S + Safety process makes organizations determine the proper location for necessary items. To "set it in order" means to put things where they will be most convenient, while keeping safety in mind. For example, if the same book is used regularly, it should be kept within arm's reach.
- 3. Shine.** This step consists of inspecting and cleaning the work area to ensure that all supplies and equipment are in their correct location and ready for use. A clean workplace indicates quality work and instills a sense of pride. A clean workplace helps identify abnormal conditions, while dust and dirt can cause product contamination and potential health hazards.
- 4. Standardize.** In this step, the team sets the expectations and processes to make 5S + Safety the standard in the workplace. This may include updating procedures and integrated work documents (IWDs), which promote safety for others doing the work in the future. To standardize is to continuously improve the office and/or facility through regular, ongoing assessments and through actions.
- 5. Sustain.** The final step may be the most important — and the most challenging — step in the process: to maintain a commitment to the 5S + Safety system, while continuing to incorporate safety. Preserving and encouraging the team to follow procedures on a daily basis through regular checks and recognition programs is vital to the success of 5S + Safety. It's easy to allow old habits to corrupt the new improvements to the area, so allow time for the 5S + Safety process to flourish!

Contact a member of the process improvement team at processimprovement@lanl.gov to get started with 5S in your area!

AMPP NEWSLETTER

FEB 2021

Reminder for Pre-Job Briefs

Added emphasis is being placed on Pre Job Briefs (Reference: ALDWP: 20-0562)

When preparing for a Pre-Job Brief, please keep the following in mind:

1. Recognition of non-routine work
2. Graded approach applicable to routine vs non-routine work evolutions
3. Before the pre-job, ensure the PIC is confirming all pre-planning steps
4. Clear R2A2s
5. Confirmation of the work
6. Characterization of the nuclear material
7. Pause Work is everyone's responsibility
8. Invite Division Office Management to the Pre-Job

Each Manager is expected to perform at least three (3) MOVs in December and January on the above topics and FLMS to perform at least on MOV outside their area of supervision. Any issues identified will be entered into the IM Tool/MOV System.

The Virgin Pulse program gives you the tools to get active and live a healthy lifestyle. Earn rewards by making healthy decisions. The more you make, the more you earn! Earn up to \$100 HCA deposit for PPO plans and \$250 HSA deposit for HDHP plans.

**Have questions about
Virgin Pulse?
Ask Marty Leal with AMPP-4!**

New hires: please contact Marty to get your Virgin Pulse account started!



Reminder!

Mobile devices — including those owned by the Laboratory and the U.S. government — banned from Limited Areas including behind the fence. Be especially aware of bluetooth devices, Fitbits, Apple Watches, etc.

